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UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte ALAN N. HOUGHTON, PHILIP J. BERGMAN,
and JEDD D. WOLCHOK

Appeal 2008-4425
Application 09/996,128
Technology Center 1600

Decided: December 11, 2008

Before DEMETRA J. MILLS, LORA M. GREEN, and
JEFFREY N. FREDMAN, *Administrative Patent Judges*.

FREDMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal¹ under 35 U.S.C. § 134 involving claims to a method of treating canine malignant melanoma. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

¹ This Appeal was heard on November 20, 2008.

Statement of the Case

Background

“Differentiation antigens are tissue-specific antigens that are shared by autologous and some allogeneic tumors of similar derivation, and on normal tissue counterparts at the same stage of differentiation” (Spec. 1:5-7). The Specification notes that “[m]elanocyte differentiation antigens have been shown to be recognized by autoantibodies and T cells of persons with melanoma, and to be relevant autoantigens” (Spec. 2:1-2). According to the Specification, “[f]or the treatment of cancers where the tumor expresses differentiation antigens therefore, it would be desirable to have a method for stimulating an immune response against the differentiation antigen *in vivo*” (Spec. 2:5-7).

The Claims

Claims 20-23, 29, and 30 are on appeal². We will focus on claim 20, which is representative and reads as follows:

20. A method for treating canine malignant melanoma in a dog suffering from canine malignant melanoma comprising administering to the dog an immunologically-effective amount of a xenogeneic differentiation antigen of the same type as a differentiation antigen expressed by melanoma cells of the dog.

² The Examiner has allowed claim 24 and withdrawn claims 25-27 from consideration (App. Br. 1).

The prior art

The Examiner relies on the following prior art references to show unpatentability:

Bouchard	US 5,773,291	Jun. 30, 1998
Zupi	US 6,080,727	Jun. 27, 2000

Zhai et al., “Development and characterization of recombinant adenoviruses encoding MART1 or gp100 for cancer therapy,” 156 *J. IMMUNOLOGY* 700-710 (1996).

The issue

The Examiner rejected claims 20-23, 29, and 30 under 35 U.S.C. § 103(a) as being obvious over Zhai, Bouchard, and Zupi (Ans. 3).

The Examiner found that the “Zhai teaches a method of inducing specific T cell immunity for mammalian metastatic melanoma treatment. Several xenogeneic differentiation antigens, including human melanoma-associated antigen, gp100 were expressed in recombinant adenoviruses were administered to C57BL/6 mice and rendered a protective affect against murine melanoma” (Ans. 3). The Examiner found while Zhai did not teach the use of tyrosinase or human gp75, Bouchard “teaches the expression of biologically active human tyrosinase and gp75, tumor-associated antigens (TAA) within a vector” (Ans. 3). The Examiner found that Zupi teaches “administration of nucleotides in a method of arresting or inhibiting melanoma cancer cell proliferation in a mammal, such as a dog” (Ans. 4).

The Examiner concluded that “[i]t would have been prima facie obvious at the time of the claimed invention was made to use tyrosinase or gp75 as a xenogeneic differentiation antigen to be administered in the melanoma treatment exemplified by Zhai” (Ans. 4).

Appellants contend that “the Examiner has treated [Zhai’s] teaching of one type of melanoma as a teaching of all types of melanoma, including canine malignant melanoma as recited in claim 20 . . . Applicants submit that these teaching do not render the claimed invention obvious” (App. Br. 3). Appellants contend that the “Zhai et al paper reports only B16 melanoma, and do not describe a metastatic derivative. Further, the tests performed in Zhai et al. have nothing to do with assessment of metastasis” (App. Br. 4).

Appellants contend that the Examiner has “over-simplified circumstances by considering that one easy to deal with lab strain of melanoma cell line is equivalent to the generally incurable canine malignant melanoma simply because both include the term melanoma, notwithstanding declaration evidence to the contrary” (App. Br. 7).

In view of these conflicting positions, we frame the obviousness issues before us as follows:

Did the Examiner err in finding that it would have been obvious to treat canine malignant melanoma with a xenogeneic differentiation antigen based upon the teachings of Zhai, Bouchard, and Zupi?

Findings of Fact (FF)

1. Zhai teaches that “[a]ctive specific immunotherapy is designed to enhance the immunologic response of patients to their own tumors” (Zhai 700, col. 1).
2. Zhai teaches that “[i]mmunization of patients with generic cancer vaccines using recombinant viral vectors expressing TAAs would

obviate the need to obtain the individual's own tumor cells as the source of Ag" (Zhai 700, col. 1 to col. 2).

3. Zhai teaches that "genes encoding tumor-associated Ags (TAA)² such as . . . tyrosinase, . . . gp100, and others has opened new possibilities for the development of cancer vaccines" (Zhai 700, col. 1).

4. Zhai teaches that "we tested the ability of recombinant adenoviruses encoding human MART1 and gp100 to protect syngeneic C57BL/6 mice from murine B16 melanoma challenge" (Zhai 709, col. 1).

5. Zhai teaches "we immunized C57BL/6 mice with these recombinant adenoviruses and demonstrated that immunization with Ad2CMV-gp100 could protect mice from murine melanoma B16 challenge administered intradermally" (Zhai 700, abstract).

6. Bouchard teaches "isolation of a full length cDNA clone encoding human tyrosinase . . . transfection and expression of this new human tyrosinase cDNA clone in mouse fibroblasts induced pigmentation" (Bouchard, col. 1, ll. 34-40).

7. Zupi teaches "methods of treating melanoma in mammals, comprising contacting the mammals with an effective amount of an ODN complementary to c-myc mRNA. Mammals include . . . mice . . . Canines (dogs)" (Zupi, col. 10, ll. 37-43).

8. The Specification teaches that "[m]ice . . . were injected subcutaneously with gp75/Sf9 lysates . . . concurrently with 10⁵ B16F10 melanoma cells administered intravenously. . . mice immunized with gp75/Sf9 lysates were substantially protected against formation of lung metastases compared to the controls" (Spec. 8).

Principles of Law

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness.” *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993).

In *KSR*, the Supreme Court taught that

The principles underlying [earlier] cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.

KSR Int’l v. Teleflex Inc., 127 S. Ct. 1727, 1740 (2007).

“[T]he [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ”. *Id.* at 1741. However, the court also noted regarding the obviousness analysis “[t]o facilitate review, this analysis should be made explicit.” *Id.* at 1741.

Analysis

While Zhai teaches a method of treatment of a mouse melanoma with a xenogeneic differentiation antigen (FF 1-5) and Zupi teaches treatment of melanoma in dogs (FF 7), the Examiner has not satisfied the requirements to set forth a prima facie case of obviousness for the particular species of cancer, canine malignant melanoma.

The Examiner has provided no evidence regarding treatment of the canine malignant melanoma with any method, much less the vaccine method of Zhai. The Examiner states that the “*metastatic* melanoma of Zhai is within the scope of CMM [canine malignant melanoma]” (Ans. 6). This represents speculation by the Examiner, since no evidence is presented to support the finding that the metastatic melanomas of Zhai, induced by injection of the B16 mouse melanoma cell line, share any commonalities with the claimed canine malignant melanoma. “[O]bviousness requires a suggestion of all limitations in a claim.” *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003).

We do not disagree with the Examiner that the B16 cell line in Zhai may cause metastasis, since the Specification itself recognizes that B16 may do so (FF 8). However, simply because Zhai demonstrated that a human xenogeneic antigen had some effect in a mouse cell line based model does not demonstrate that the Zhai treatment method would predictably treat other forms of melanoma in entirely different species of mammals.

Appellants have provided significant evidence demonstrating that the Zhai treatment method of an induced melanoma would not predictably treat canine malignant melanoma. In the Houghton Declaration, the Declarant states that “B16 melanoma is not a viable model for canine malignant melanoma” (Houghton Dec. ¶ 5). The Declarant further notes that “chemotherapeutic drugs which are active against B16 melanoma . . . are inactive in the treatment of melanoma” (Houghton Dec. ¶ 5). The Modiano

abstract³ specifically teaches that “standard therapeutic approaches have not proved effective in treatment of canine malignant melanoma, with only marginal improvement in the outcome of dogs with this disease” (Modiano abstract). The Tremayne⁴ article notes regarding canine malignant melanoma that the “fatality rate of this cancer is very high despite aggressive treatment with surgery, radiation therapy and chemotherapy” (Tremayne).

The Examiner attempts to rebut the evidence presented in the Houghton Declaration and the Modiano and Tremayne references by citing Nicolson⁵. Nicolson simply recognizes that B16 melanoma cells represent a generic metastatic model. Nicolson fails to evidence that the B16 melanoma model would be predictive of treatment modalities for canine malignant melanoma.

It may have been “obvious to try” treatment of canine malignant melanoma using the xenogeneic vaccine method of Zhai, and there is certainly market pressure to do so. But, this is not a situation where there are a finite number of predictable potential treatments for canine malignant melanoma. Appellants’ evidence demonstrates that the ordinary veterinarian found treatment of canine malignant melanoma extremely

³ Modiano et al, *The molecular basis of canine melanoma: pathogenesis and trends in diagnosis and therapy*, 13 J. Vet. Intern. Med. Abstract (1999).

⁴ Jessica Tremayne, *UC-Davis studies malignant melanoma in dogs*, DVM, the newsmagazine of veterinary medicine (Aug. 1, 1998).

⁵ Nicolson et al., *Specificity of arrest, survival and growth of selected metastatic variant cell lines*, 38 Cancer Research 4105-4111 (1978).

unpredictable, with low survival rates for any of the common therapies. We therefore find that it would not have been obvious to apply the method of Zhai to canine malignant melanoma as required by claim 1.

Having found that claim 1 is unobvious, we also find that dependent claims 21-23, 29, and 30 are unobvious for the same reasons.

Conclusions of Law

The Examiner erred in finding that it would have been obvious to treat canine malignant melanoma with a xenogeneic differentiation antigen based upon the teachings of Zhai, Bouchard, and Zupi.

SUMMARY

In summary, we reverse the rejection of claims 20-23, 29, and 30 under 35 U.S.C. § 103(a) over Zhai, Bouchard, and Zupi.

REVERSED

Ssc:

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